

An arginine, alanine, and phenylalanine mixture increases synthesis of ketone bodies during low-intensity exercise via stimulating glucagon secretion in men with obesity

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Abstrak

During exercise, levels of several hormones are acutely increased in the blood. We previously reported that pre-exercise ingestion of a specific combination of amino acids (arginine, alanine, and phenylalanine; A-mix) increases fat mobilization and ketone body synthesis by increasing secretion of adrenalin and glucagon in healthy active young men. Herein, we sought to determine whether this acute hormone response could be induced upon administration of A-mix combined with exercise in patients with obesity during periods of low-intensity exercise. We performed a randomized crossover study of eleven middle-aged men with obesity without regular exercise habits, administered either A-mix (3 g/dose) or a placebo (3 g of dextrin/dose). Thirty minutes after ingestion, each subject subsequently performed workload tests on a cycle ergometer at 40% of peak oxygen consumption for 1 h. Following oral intake of A-mix, the concentration of plasma ketone bodies was significantly increased during exercise. This was accompanied by a significant increase in the area under the concentration-time curve for glucagon. Taken together, these results indicate that pre-exercise ingestion of the A-mix supplement significantly accelerated hepatic ketone body synthesis via stimulation of glucagon secretion during exercise in men with obesity.